Speaking Points for Climate Outreach to Schools

Prepared by:
Barb Mayes Boustead
NWS Omaha/Valley, NE
Spring 2011

Introduction

- NWS talks about weather to schools – this is a “kit” to help talk about climate, too!
- These points are meant to help you, not to show verbatim in the classroom!
  - Would be boring to the students!
  - Consider providing a copy to teachers
- For supporting materials, visit:
  - Teacher resources
  - Web links
  - Short videos
  - Activity suggestions
- Please provide feedback to author at Barbara.Mayes@noaa.gov

Weather and Climate: What's the Difference?

- Opening interaction:
  - Ask students what the weather is today
  - Then, ask what the climate is today
    - Trick question! Climate isn't just about one day (or week or even month)
- Climate is the "average" weather over long periods of time
- Understanding the difference: Analogies
  - Climate = clothes in the closet, weather = what you wear today
  - Climate = batting average, weather = at-bat

Why Does the National Weather Service Do Climate?

- One of many government agencies studying climate (along with other NOAA agencies like the National Ocean Service and National Climatic Data Center, plus NASA, USGS, USDA, and others)
- What NWS does:
  - Take observations
  - Make climate outlooks (forecasts)
  - Analyze climate events
  - Study and research climate

Taking Observations

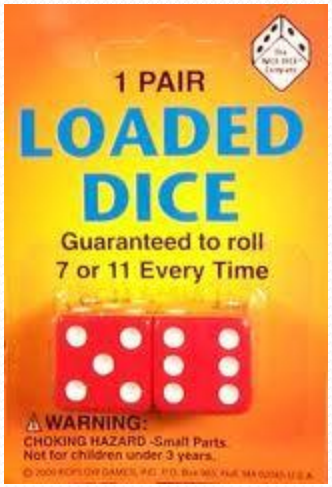
- Weather observations are the backbone of future studies about our climate!
- Our job in NWS:
  - Collect
  - Quality control (go through the observations to check their accuracy)
  - Send to National Climatic Data Center for more quality control and archiving
- Different sources of observations:
  - Main “climate” stations (automatic observations supplemented by human observations)
  - Automated weather observing systems
  - Cooperative Observers (volunteers!)
  - Storm reports provided by volunteer spotters

Making Climate Forecasts

- Predictions of the chances of wet/dry and warm/cold
  - Not predicting amounts/values/specific readings (not predicting how wet/dry or warm/cold) … not aiming a dart at a target
  - Predicting the change in the odds: Are the dice loaded?
- Outlooks include
  - One-Month temperature and precipitation
  - Three-Month temperature and precipitation, out through a year
  - Seasonal Hurricane Outlook
  - Forecasts of El Niño and La Niña

Activity: Rolling the Loaded Dice

- In advance: Create “loaded dice” (see website for guidance)
- Ask students to roll light-loaded dice 10 times
  - Take turns among students
  - Record results
- Then ask students to roll heavy-loaded dice 10 times
  - Take turns among students
  - Record results
- Discuss:
  - Loading dice = climate signals that affect forecast (examples: climate change, El Niño/La Niña)
  - Loading the dice makes a certain out come more likely, but doesn’t guarantee it
    - Weather still happens!



Analysis of Climate Events

- Monitoring drought conditions
- Determining the impacts of El Niño/La Niña and other climate signals
- Studying the effects of temperature and precipitation trends resulting from climate change

The Elephant (Polar Bear?) in the Room: Climate Change

- Could spend weeks in science class learning about it!
  - Teachers: Resources for lesson plans (see website for resource handout)
- To spend a short time on it: Yes, climate is changing
  - Always has through Earth's history, but this time, humans are causing changes
  - Humans are increasing greenhouse gases in the atmosphere (carbon dioxide and methane)
    - Absorbing more of Sun's energy
  - Warming is uneven around the planet
  - Sea levels are rising, temperatures are rising in most places (especially the Arctic), precipitation patterns are changing
- Remember, weather and climate are different
  - Does a warmer climate mean that we'll never get cold? Of course not! It will still snow, it will still get cold. We'll still have winter. We'll just be less likely to set record cold. (Remember, the dice are loaded, but year to year, there are no guarantees.)

What Can We Do About Climate Change?

- Every small step helps! Many suggestions also will help save money (Bonus: Parents love that!)
- Use less energy (Ask students to brainstorm how)
  - Turn off lights, TVs, computers when not in use
  - Unplug chargers when not in use
  - Turn the thermostat down in the winter, especially at night
  - Turn the thermostat up in the summer
- Use less water (Ask students to brainstorm how)
  - Take shorter showers
  - Water grass before dawn, if at all
  - Turn off the tap when brushing teeth
- Use less gas (Ask students to brainstorm how)
  - Carpool
  - Combine errands
  - Buy fuel-efficient cars
  - Ride bikes or walk
- Buy food from local sources whenever possible
  - Farmer's markets
- Recycle

Time for Questions!

- Enjoy talking to the students and teachers!

- Don’t be afraid to say “I don’t know” if you are unsure of answers
  - Suggest to students that they get help from the teacher to look up answers to questions you can’t answer
  - Weather and climate are related but not the same study area… not every meteorologist is an expert in climate, and not every climatologist is an expert in weather!

Thank you for taking the time to talk to students about our climate activities in NWS!